METRO DETROIT METALWORKING CLUB
June 2012 Newsletter

Treasury report:

Balance: $817.00 (April 2012)
$717.05 (May 2012)

Next meeting: July 11, 2012
MCCC - 7:00pm

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Vice Pres:	Emil Cafarelli
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President's message: WOW! Last week was so humid! (how humid was it?) It was so humid that I had to put life preservers on my dogs outside! Ok, maybe not that wet, but it sure was miserable outside. .

I may have a program lined up, but the guy has not got back with me yet... So, bring in some show and tells and stuff.

Makers Faire is at the end of this month and I would really like to have some club members showing their stuff!!!! The cannon project is on track. We should be able to start construction by next month! BOOOOOM! goes the cannon! Our picnic is still waiting but I am sure we will have one somewhere ....

Hope to see ya all Wednesday! Rick

Announcements: Ron Schmidt reported his recent experience and satisfaction with heat treating services provided by Superior Heat Treat LLC, 36125 Groesbeck Road, Clinton Township, MI, 48035-1554, ph. (586) 792-9500 (www.superiorheattreat.com).

The company offers many services: flame and salt bath hardening, black oxide treatment, carburizing, stress reliving, sand and vapor blasting, and deep freeze stabilizing among them. The minimum order is $25 (about 25-lbs), and Ron suggested that MDMC group buys might be organized from smaller projects to meet this requirement. However, the minimum order must be of the same alloy (for instance, 25-lbs of O1, etc.).

Following the meeting, Marc Nowakowski mentioned that *Fine Woodworking* magazine

has a comprehensive article in its current issue (#227) which compares many different rust preventative products against one another. The article was available online at: www.finewoodworking.com

A copy of the article is attached at the back of this newsletter. Thanks for the heads-up Marc, it looks like a good article.

Reminder – bring any spare brass that you're willing to donate to the club cannon project to the July 11th meeting.

Show and Tell: Joe Pietsch is back! He brought along a nice assortment of oddities from his tool collection. This first one was in the "what is it" category:

The body of the device can be gripped in a vise and the hand crank rotates a spindle carrying a collet. Cutters can be mounted in an adjustable tool holder near the perimeter of the collet:

The general consensus among the members was that it is an armature cutter, used for truing shafts.

Joe's next tool is a saw filer, though not the type most of us might be used to seeing:

It consists of a blade clamp, a guide, and the file and was apparently used to sharpen the teeth on two-man crosscut saws.

Joe's final tool was a brass "grabber" with an adjustable stop behind the handle. It was not known which trade or purpose this tool might have had, but it was very nicely made:

It was great to have you back again Joe!

Dimitar Rangelov shared a recent eBay find with us. It is a Skoda live center set with a Morse No.3 taper:

Skoda products are manufactured in the Czech Republic and appear to be of high quality:

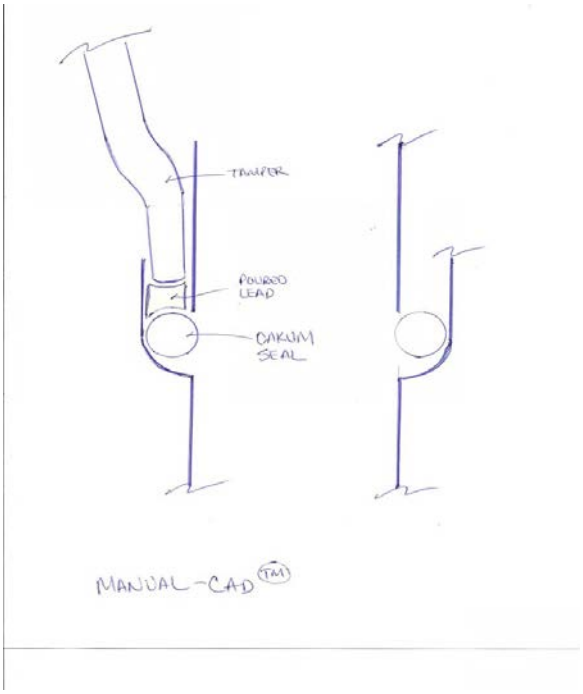
This one came with a nice selection of replaceable ends of several sizes, for both inside and outside work. Congratulations on your find Dimitar.

Kevin Thomas brought along several interesting items related to the plumbing trade. The first was a furnace for melting lead used to join cast iron pipe:

The furnace is about 24-inches tall and was manufactured by the Lakeside Company for Montgomery Ward:

Kevin's furnace uses *gasoline* (!) and works on the same principle as a camping lantern by pressurizing the fuel tank.

Once the lead is melted it is poured into the joint, which has an oakum seal. Lead contracts, so tampers are used to compress the lead into the joint during this period:



Tampers are shown in the next picture, which also shows another plumber's tool which generated some interesting discussion among the members. David Zimmerman identified it as a "horizontal joint runner."

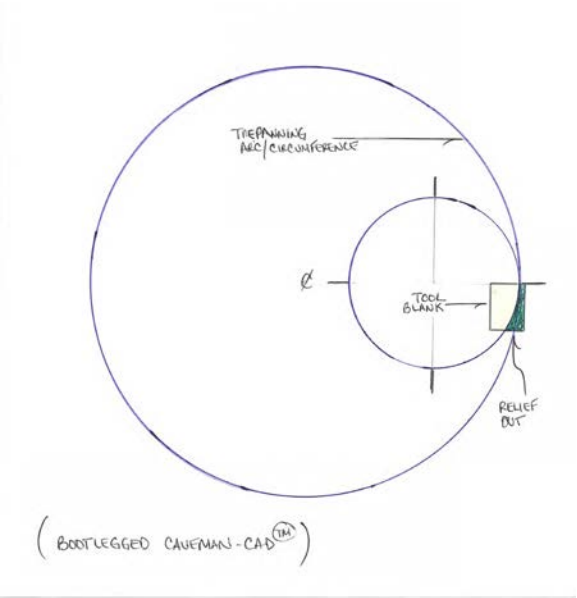
The previous joint diagram is vertical. Lead poured into this joint will stay there while cooling by the effect of gravity and the oakum seal (which remains in the joint). However, in addition to the permanent internal oakum seal, horizontal joints require a temporary seal at the outer lip of the joint so that the molten lead does not simple leak out before cooling enough to start the tamping process:

According to Dave, that temporary seal is the asbestos rope of the horizontal joint runner (pictured above). It is wrapped around the incoming pipe and both ends are inserted into the metal guide (shown at the left end of the rope in the above picture). The rope is then pushed up tight against the joint, but the "V" formed where the rope comes back together on itself naturally leaves a gap which is oriented at the top of the pipe and provides a place to pour in the molten lead.

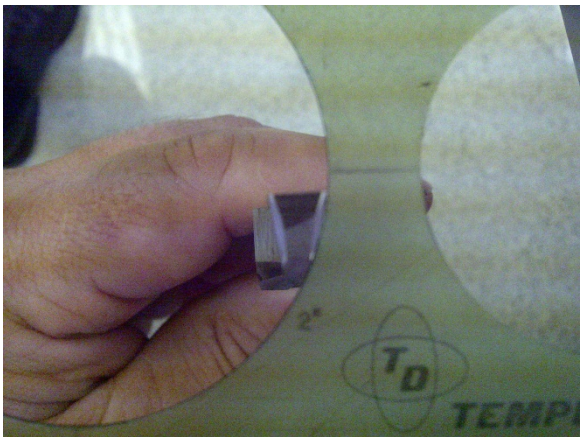
Brian Lawson noted that a similar tool and technique is used to pour molten Babbitt bearings. Thanks to Kevin, Dave and Brian

for enlightening us on this plumbers trick!

Kevin Thomas also shared another of his machining techniques, this one highlighting tips on how to make trepanning operations easier. He starts with a properly ground tool, achieved by using an ordinary drafting circle template to help layout an arc on the tool which will provide the proper clearance while cutting (only layout of the outside relief grinding mark is shown here):



The key contribution provided by the circle template is that each circle has hash marks at 90-degrees around their perimeters which form “cross hairs” on the circle’s center. After bluing the tool blank, the top of the tool is placed at the 90-degree mark (arc center) and the circle template is used to trace an arc segment which is slightly smaller than the than the outside of the groove being cut. Those marks can them be used to guide grinding of the tool:



Another trepanning tip that Kevin offered was avoid cutting completely through the material. Instead, he suggested listening carefully to the pitch/frequency of the noise being made by the tool while cutting. It will change as the tool nears cutting through. He suggests pulling the tool at this point, shutting the machine down and tapping the part loose from the material. That will prevent the part from breaking stuff as it comes loose while still in motion and in contact with a cutting tool.

John Lee shared his trick of incorporating an adjustable height tool holder with an indicator to form a center finder:

Once set up the indicator can be left in the tool holder permanently and is an effective time saving device for repeated operations:

Ron Grimes displayed a nice collection of his pens. They come in a variety of sizes, shapes and materials:

Some are dual purpose, with a ballpoint pen on one end and a phone/iPad stylus tip on the other. Others are made of exotic woods like Brazilian Bloodwood. Others yet have themes, like a pen made from the bullet and case of 50mm ammunition, or another incorporating gun sights.

Ron also displayed some of his non-pen products. These include keychain storage bottles, a keychain perfume dauber with an o-ring seal, a rape whistle, and a "bracelet helper" to assist getting control over the loose end of a bracelet while putting it on:

Nice work Ron, as always!

Bob Farr – Secretary

TOOL TEST

Got Rust?

New protectants thrashed old favorites in our tests

BY THOMAS McKENNA

If you live in a humid area of the country, you are more than likely familiar with the menacing presence of rust, especially if you work in an unheated basement or garage shop. Left untreated, rust will eat away iron and steel relentlessly, like a hoard of hungry termites on dead wood, causing extensive damage. To help protect your expensive woodworking tools, you need to take steps to prevent rust. One way is to coat iron and steel surfaces with a rust inhibitor. But which one?

Look on any woodworking forum or website, and you'll see a lot of "expert" recommendations about which products to use. To end the debate, *Fine Woodworking* put 20 of these commonly available preventers—from waxes to natural oils to petroleum-based products—through a torture test to see which ones really do work best.

The test results aren't the only answer to stopping rust. In the end we'll give you some sound strategies for fighting rust in your shop. Before you can go to battle, however, it's important to understand how rust forms.

Water is the instigator

Put simply, rust (iron oxide) is a form of corrosion that occurs when both iron and oxygen are exposed to moisture, whether in the air or on the surface. That moisture is the medium through which the players that chemically cause corrosion travel. Rust formation can be accelerated with the addition of a stronger oxide or acid—the salt in sea air, for instance, or the moisture from your fingertips (ever see prints on your hand tools?). The process also speeds up with temperature variations that cause condensation. In an unheated garage shop, as a cold night turns to a warm day, condensation settles on the tops of tablesaws, jointers, and bandsaws, as well as on hand tools left on a bench.

The corrosion starts on the surface and spreads like a rash. As corroded metal flakes away, fresh iron surfaces are exposed to the oxygen and water, and the process begins anew until the metal disintegrates. The key to stopping the degradation is to prevent water from mixing with iron and oxygen. And that's what these various coatings are meant to do.

10 days of hell

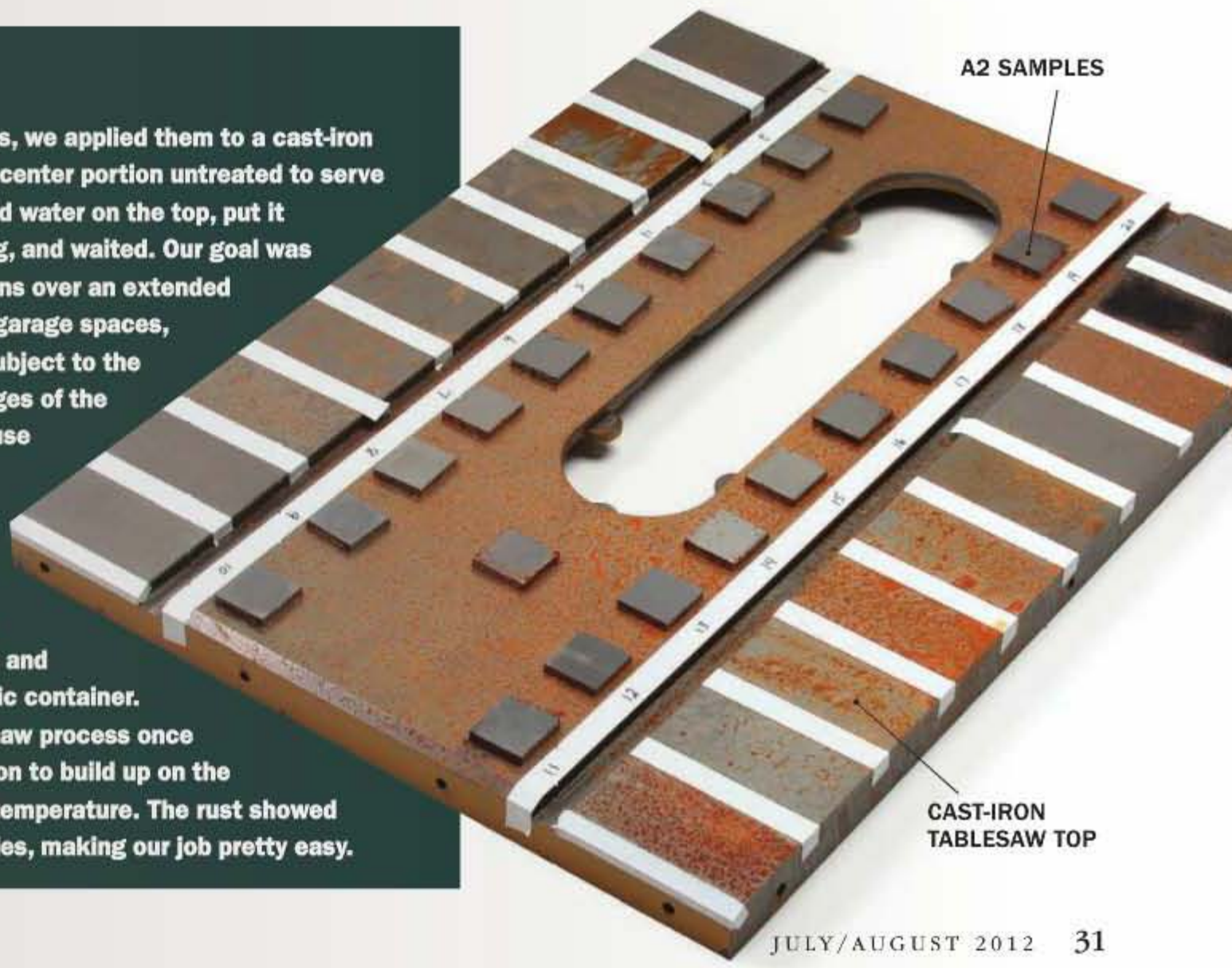
We tried the rust preventers on a cast-iron tablesaw top and some samples of A2 tool steel (an iron alloy). All of the samples were subjected to extreme environments (see "A recipe for rust," below). The rust came on strong. We started seeing it on the tablesaw top after only one night, and on the tool steel within 48 hours. After 10 days, it was clear which products were working and which were failing.

The top seven performers were CRC Industrial 3-36, LPS 3, Moovit, Rust Block, WD-40,

Tough test

To test the rust preventers, we applied them to a cast-iron tablesaw top, leaving the center portion untreated to serve as the control. We spritzed water on the top, put it outside under an overhang, and waited. Our goal was to accelerate what happens over an extended period in some unheated garage spaces, where the top would be subject to the extreme temperature ranges of the outside air that would cause condensation.

We also applied the coatings to A2 steel samples. We placed the samples in a freezer for a few hours, removed them, and put them in a lidded plastic container. We repeated the freeze-thaw process once daily, to allow condensation to build up on the steel as it reached room temperature. The rust showed up quickly on some samples, making our job pretty easy.



Results don't lie

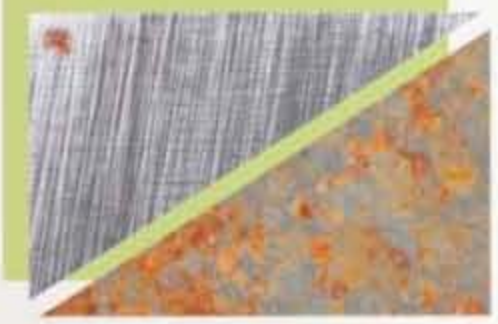
THE BEST OF THE BEST

We picked CRC Industrial 3-36 from the top seven performers as the Best Overall because it worked well on both cast iron and tool steel and did not leave an objectionable sticky or slick residue on the chisel. However, it does have a petroleum odor. Though the smell dissipates, some may find the spray offensive to use on hand tools. For those people, we recommend using the CRC for machines and Moovit for hand tools.

WD-40 Long-Term Corrosion Inhibitor, and 3M Rust Fighter 1. However, a rust preventer is useless if it interferes with your woodworking. So we did further tests so see if any of the top picks would discolor wood, or interfere with finishes or glue adhesion. We took the extreme path again, applying the products directly to wood samples, letting them dry, and then applying both a water-based urethane and an oil-based polyurethane. We also put a dab of yellow glue on the treated boards to see if the products affected adhesion. All of the products discolored wood when applied directly to it, but none of them interfered with the topcoats. The only product that resisted glue adhesion was LPS 3. On that sample the glue popped off pretty easily with a chisel.

Next, for a more realistic contamination test, we applied the top six products to A2 steel samples, rubbed them across some sample boards, and applied the oil- and water-based finishes on top of the boards. None of the samples showed

BOESHIELD T9
$10 (4 oz.)
rockler.com



CAMELLIA OIL
$12 (8 oz.)
lie-nielsen.com

PERMATEX RUST TREATMENT
$10 (10.25 oz.) amazon.com

PROGOLD PG2000
$11 (16 oz.)
amazon.com

RENAISSANCE WAX
$22 (65 ml)
rockler.com

SLIPIT
$10.25 (12 oz.)
grizzly.com

TOPCOTE BY BOSTIK
$19 (10.75 oz.)
woodcraft.com

TOPSAVER
$26 (8 oz.)
woodcraft.com

Tool steel samples courtesy of The Steel Store, Waterbury, Conn.

FAMILIAR PRODUCTS FADED FAST

Waxes and natural oil-based products have often been touted as rust preventers on machines and hand tools. But they didn't fare well in our testing.

WAXES WANED

Waxes work well as lubricants, especially on the bottoms of planes and on machine tops, but they don't offer much protection against rust.

OILS SLIPPED UP

Camellia and Jojoba oils are natural products (made from vegetable oil), so they have a pleasant odor. That quality is partially why they are used often by hand-tool aficionados as a protectant. But in our tests, the products were marginal performers.

CRC INDUSTRIAL 3-36
$6 (11 oz.)
amazon.com

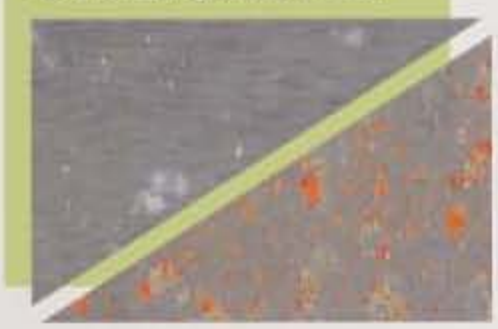
AUTHOR'S BEST OVERALL CHOICE

JOJOBA OIL
$10 (8 oz.)
lie-nielsen.com

LPS 3
$15 (11 oz.)
jdindustrialsupply.com

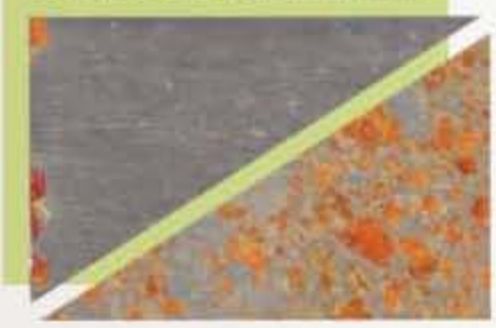
MOOVIT
$10 (10 oz.)
Leevalley.com

RUST BLOCK BY EVAPO-RUST
$9 (16 oz.) gemplers.com

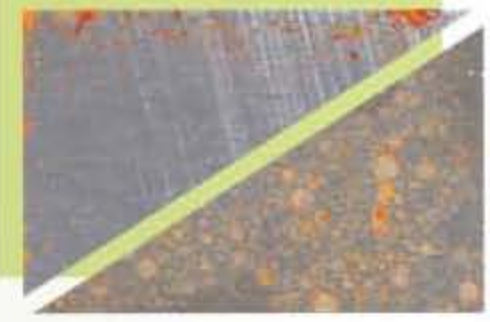


RUSTERIZER ARMOR
$16 (32 oz.)
amazon.com

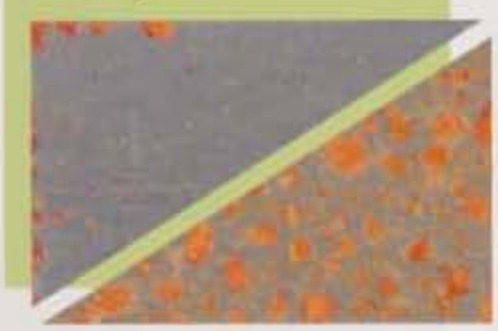
RUST-OLEUM STOPS RUST RUST INHIBITOR
$11 (10.25 oz.) amazon.com



SC JOHNSON PASTE WAX
$7 (16 oz.) The Home Depot



WAXILIT
$16 (7 oz.)
leevalley.com



WD-40
$5.50
Most hardware stores

WD-40 LONG-TERM CORROSION INHIBITOR
$16 (6.5 oz.) amazon.com

3M RUST FIGHTER-1
$17 (18 oz.)
amazon.com

Photos: Michael Pekovich

any discoloration of the wood, and there were no problems with finish adhesion.

Last, to find out if any products left an objectionable residue on hand tools, we applied them to some chisels and then basically felt them, comparing an untreated chisel with the treated ones. The CRC Industrial 3-36 and Moovit were the favorites here. Each of these products were very close in feel to the untreated chisel.

We also applied the products to a jointer table and gave them a feel for any objectionable residue. Most of the products left a slick surface on the cast iron, a plus for machine tables. The only two that left a visible and tactile residue were 3M Rust Fighter 1 and LPS 3.

The best defense

Making a choice among the products was tough. 3M Rust Fighter 1 and LPS 3 performed perfectly in both torture tests, but we didn't like the sticky feel of the coating that both left on the tool steel and cast iron. Other products did well on one steel but showed kinks in the other. In the end we picked CRC Industrial 3-36 as Best Overall. If you prefer a non-petroleum product for your hand tools, we recommend Moovit.

But the best defense against rust has multiple prongs. Aside from weatherproofing and heating the shop, we also recommend using a dehumidifier to help control moisture. And because none of the products we tested can be applied to the inside of power tools (rust can degrade motor components), we recommend keeping desiccants or corrosion inhibitors in tool cases (above right). □

Thomas McKenna, senior editor, fights rust daily in his basement shop.

Solutions for enclosed spaces. *Volatile corrosion inhibitors (VCIs) and desiccants help prevent rust in drawers, tool cases, and cabinets. VCIs form a protective coating on tools while desiccants draw moisture from the air.*

Dry the air. *You also can curb moisture with a dehumidifier—just remember to empty it regularly. For basement shops, a masonry waterproofing paint keeps moisture from migrating through the porous concrete walls. Garage floors should be sealed as well.*

Other ways to manage moisture

The wipe-on or spray products we tested aren't the only weapons available in the battle against rust. Aside from heating the shop or using a dehumidifier, two other options are desiccants and volatile corrosion inhibitors (VCIs). These products prevent corrosion of critical components in contained spaces, such as boxes, drawers, and cabinets. Each does the job differently.

Desiccants are made from a number of porous minerals, including calcium and silica, as well as manmade compounds. They help prevent rust by removing moisture from the air via the process of *adsorption* (vs. absorption). When a substance is adsorbed, it remains separate from its host, which essentially works as a storage drum. And that storage area is limited. A desiccant compound can become saturated, or full. Some desiccants, such as silica and a few calcium-based products, can be recharged, or reactivated, with heat to remove the stored moisture and used again.

VCIs emit molecules that settle on metal surfaces, forming a protective layer that repels moisture. VCIs are made by a number of manufacturers from proprietary chemicals and often are infused into a porous carrier material, such as foam. They are disposable and cannot be recharged—some last six months, others work for up to five years.

Desiccants and VCIs both are designed to work in enclosed spaces, and you purchase them based on the square footage of that space. To get the most protection from both products, the storage space needs to be as airtight as possible. If a drawer is left open, the protective tool coating emitted by a VCI will dissipate, while a desiccant will become saturated quickly.